

ABSTRACT

A sample separation apparatus including a porous, or rough, capillary column. The porous capillary column includes a matrix which defines pores, and may be formed from a material such as porous silicon. Alternatively, the capillary column may have a rough surface of hemispherical grain silicon. The capillary column is defined in a surface of a substrate, such as silicon. The sample separation apparatus may include a stationary phase or a capture substrate disposed on the surfaces thereof. The sample separation apparatus may also include a detector positioned proximate the capillary column. A variation of the sample separation apparatus includes an electrode proximate each end of the capillary column. The sample separation apparatus may be employed to effect various types of chromatographic separation, electrophoretic separation, and analyte identification.